

Amendments to the Claims

Claims 1-163 (cancelled)

Claim 164. (currently amended): ~~A parallel reactor~~ The apparatus of as set forth in claim 163 claim 177 wherein said ~~stirrer is~~ spindle and stirring blade are formed of a chemically resistant plastic material.

Claims 165-167. (cancelled)

Claim 168. (currently amended): ~~A parallel reactor~~ The apparatus of as set forth in claim 167 claim 177 wherein said ~~drive system comprises a drive mechanism located external to the vessels, and~~ further comprising magnetic feed through devices for magnetically coupling the drive mechanism to the ~~upper spindle portions of the multi-piece~~ spindles.

Claim 169. (currently amended): ~~A parallel reactor~~ The apparatus as set forth in claim 168 wherein said drive mechanism comprises a gear train for rotating each magnetic feed through device, and a motor for rotating gears of the gear train to effect conjoint rotation of the ~~multi-piece~~ spindles at speeds ~~up to~~ from about 0 to about 3000 rpm.

Claim 170. (currently amended): ~~A parallel reactor~~ The apparatus as set forth in claim 169 claim 207 wherein each ~~vessel~~ liner has as volume of less than about 500 ml.

Claim 171. (currently amended): ~~Plastic stirrers for use in stirring reaction mixtures in a parallel reactor, said reactor comprising vessels for containing said reaction mixtures, metal spindle portions associated with the vessels, couplings on the metal spindle portions for releasably coupling the plastic stirrers to the spindle portions in positions wherein the stirrers extend down into the vessels, and a drive system for rotating the metal spindle portions and the plastic stirrers coupled thereto thereby to mix the contents of the vessels, The reactor system as set forth in claim 206 wherein each plastic stirrer comprising comprises a shaft having a plastic core and a plastic mixing blade on the shaft, said shaft having a quick connect/disconnect~~

~~element thereon adapted for engagement with said coupling for releasably coupling the plastic stirrer to the metal spindle portion for rotation therewith whereby upon completion of a mixing operation the plastic stirrer is adapted to be disconnected from said coupling, discarded and replaced by a new plastic stirrer after a single use.~~

Claims 172 and 173. (cancelled)

Claim 174. (currently amended): ~~Plastic stirrers~~ The reactor system as set forth in claim 171 wherein each stirrer is sized for reception in ~~a vessel~~ a well having a volume of less than 500 ml.

Claim 175. (currently amended): ~~Plastic stirrers~~ The reactor system as set forth in claim 174 wherein each stirrer is sized for reception in ~~a vessel~~ a well having a volume of less than about 20 ml.

Claim 176. (currently amended): Apparatus for the parallel processing of reaction mixtures, comprising

a reactor block having a series of wells therein extending down from an upper surface of the block for containing the reaction mixtures,

an upper plate removably secured to said reactor block over said upper surface thereof, said upper plate having openings therein in registry with the wells in the reactor block,

stirring mechanisms attached to said upper plate and removable with the upper plate for stirring said reaction mixtures, said stirring mechanisms extending down through the openings in the upper plate and into respective wells, and

seals for sealing against leakage through said upper plate openings when the upper plate is secured to the reactor block,

each stirring mechanism comprising a drive mounted on said upper plate and a multi-piece spindle rotatable by said drive, said multi-piece spindle having a metal upper spindle portion, a ~~single-use~~ plastic stirrer, and a coupling for releasably coupling the plastic stirrer to the metal upper spindle portion in a position wherein the stirrer extends down into a respective well,

said plastic stirrer being removable from said coupling after a mixing operation to permit discard and replacement of the stirrer ~~after a single use~~.

Claim 177. (currently amended): An apparatus for parallel processing of reaction mixtures comprising:

a reactor block having a series of wells therein extending from an exterior surface of the block for containing the reaction mixtures,

a removable plate removably secured to the reactor block, the removable plate having openings therein in registry with the wells in the reactor block,

a temperature control system for regulating the temperature of the reaction mixtures, and
a stirring system attached to the removable plate and removable with the removable plate for agitating the reaction mixtures, the stirring system comprising:

spindles extending into respective wells, each of the spindles having a first end portion and a second end portion,

a stirring blade attached to the first end portion of each of the spindles, and

a drive mechanism located external to the ~~vessels~~ wells that is adapted to rotate the spindles.

Claim 178. (previously presented): The apparatus of claim 208 wherein said exterior surface of the reactor block is an upper surface, and wherein said removable plate is an upper plate overlying said upper surface.

Claims 179-196. (cancelled)

Claim 197. (previously presented): A combinatorial chemistry reactor system for parallel processing of reaction mixtures, said system comprising

a reactor block having a series of wells therein for holding said reaction mixtures,

a removable plate removably secured to the reactor block, the removable plate having openings therein in registry with the wells in the reactor block,

seals for sealing the wells of the reactor block to allow said reaction mixtures to react under pressure when the removable plate is secured to the reactor block, and

a stirring system supported by the removable plate and removable with the removable plate for agitating the reaction mixtures, the stirring system comprising stirrers extending into respective wells, and
a drive mechanism located external to the wells for moving the stirrers to agitate reaction mixtures in the wells.

Claim 198. (previously presented): A system as set forth in claim 197 wherein said drive mechanism comprises a drive train for driving said stirrers, and a motor for driving the drive train.

Claim 199. (previously presented): A system as set forth in claim 198 wherein said drive train comprises a plurality of drive gears in mesh with one another and a motor for driving said drive gears.

Claim 200. (previously presented): A system as set forth in claim 197 wherein said drive mechanism comprises a plurality of drive gears on the stirrers, and one or more motors for driving said drive gears.

Claim 201. (previously presented): A system as set forth in claim 200 wherein said drive gears are in mesh and driven by a single motor.

Claim 202. (previously presented): A system as set forth in claim 197 wherein said stirrers are removably attached to said drive mechanism.

Claim 203. (previously presented): A system as set forth in claim 197 wherein said stirrers are of a non-metal chemically resistant material.

Claim 204. (previously presented): A system as set forth in claim 203 wherein said stirrers are of a polymer material.

Claim 205. (previously presented): A system as set forth in claim 197 further comprising fasteners for removably fastening said removable plate in face-to-face relation with an upper surface of said reactor block.

Claim 206. (previously presented): A combinatorial chemistry reactor system for parallel processing of reaction mixtures, said system comprising

a reactor block having a series of wells therein extending down from an upper surface of the block, said wells holding said reaction mixtures,

an upper plate removably secured to the reactor block in face-to-face relation with said upper surface, the removable plate having openings therein in registry with the wells in the reactor block,

seals for sealing the wells of the reactor block to allow said reaction mixtures to react under pressure when the removable plate is secured to the reactor block, and

a stirring system supported by the removable plate and removable with the removable plate for agitating the reaction mixtures, the stirring system comprising

stirrers extending into respective wells, and

a drive mechanism located external to the wells for moving the stirrers to agitate reaction mixtures in the wells, said drive mechanism comprising a drive train for driving said stirrers and one or more motors for driving said drive train, said stirrers being removably attached to said drive mechanism.

Claim 207. (previously presented): The apparatus of claim 177 further comprising removable liners in the wells.

Claim 208. (previously presented): The apparatus of claim 177 wherein said removable plate is removably secured face-to-face with said exterior surface of the reactor block.

Claim 209-219. (cancelled)

Claim 220. (currently amended): ~~Plastic stirrers as set forth in claim 219~~ The reactor system as set forth in claim 171 wherein said plastic core ~~consists of~~ comprises polyethylethylketone (PEEK)

Claim 221. (currently amended): ~~Plastic stirrers as set forth in claim 219~~ The reactor system as set forth in claim 171 wherein said plastic core ~~consists of~~ comprises polytetrafluoroethylene (PTFE).

Claim 222. (currently amended): ~~A parallel reactor as set forth in claim 179~~ The apparatus of claim 177 wherein each of said ~~vessels~~ said wells is sealed against fluid communication with the ~~other vessels~~ other wells.

Claim 223. (cancelled)

Claim 224. (currently amended): ~~A parallel reactor as set forth in claim 223~~ The apparatus of claim 164 wherein said ~~plastic core consists of~~ spindle and stirring blade comprise polyethylethylketone (PEEK)

Claim 225. (currently amended): ~~A parallel reactor as set forth in claim 223~~ The apparatus of claim 164 wherein said ~~plastic core consists of~~ spindle and stirring blade comprise polytetrafluoroethylene (PTFE).

Claims 226 and 227. (cancelled)

Claim 228. (currently amended): ~~A parallel reactor~~ A system as set forth in ~~claim 227~~ claim 204 wherein said ~~plastic core consists of~~ stirrers comprise polyethylethylketone (PEEK).

Claim 229. (currently amended): ~~A parallel reactor~~ A system as set forth in ~~claim 227~~ claim 204 wherein said ~~plastic core consists of~~ stirrers comprise polytetrafluoroethylene (PTFE).

Claims 230-234. (cancelled)